

ROBOT AEROBICS

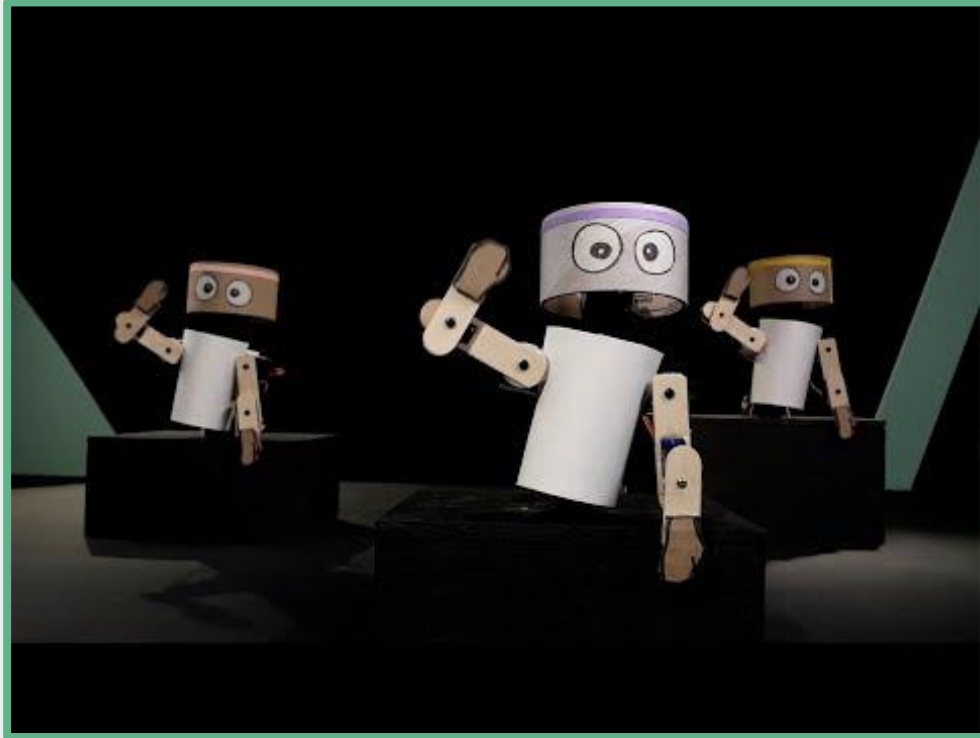
Maker and Educator Guide

CodeJoy

Maker Camp

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ROBOT AEROBICS SNEAK PEAK



During this live coding session, Kelsey and Matt the Robot are leading a dance fitness class designed to get the robots of the world moving, and they need YOUR help to code the dancers! Groove along with the robots as you program their servo motors to move to the beat. CodeJoy participants will learn the basics of coding position servo motors and creating sequences and algorithms.

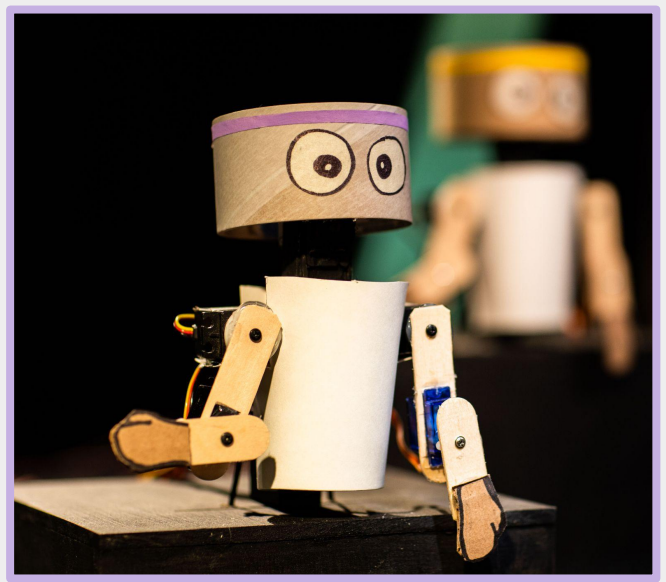
YOU'VE DONE THE SHOW... NOW WHAT?

MAKE YOUR OWN DANCING ROBOT!

PROJECT 1:
Single Motor
Dancer



PROJECT 2:
Aerobics
Robot



SUGGESTED TECHNOLOGY

Hummingbird Robotics Kit



The image displays the Hummingbird Robotics Kit components. At the center is a clear plastic storage case with a purple base, containing a 'HUMMINGBIRD USER GUIDE' and a 'CONTROLLER BATTERY PACK'. Surrounding the case are various parts: four blue micro:bit boards, four small DC motors, four servo motors, four gears (two yellow and two pink), a USB cable, a power adapter, and several jumper wires. The components are arranged on a white background.

Find out more [HERE](#).

Find out more [HERE](#).

SUGGESTED CRAFT SUPPLIES

STRUCTURAL

- Cardboard
- Craft sticks
- TP tubes
- Plastic cutlery

TOOLS

- Box cutter
- Scissors
- Tape
- Hot glue

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DECORATION

- Permanent markers
- Pipe cleaners
- Feathers
- Googly eyes
- Art supplies
- Recyclable materials

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Computer, Chromebook, iPad, or tablet for programming



A black laptop is shown on the left, displaying a Windows 8 Start menu with various app tiles. In the center, the word "OR" is written in a large, black, sans-serif font. To the right, a white iPad is shown, displaying a home screen with numerous app icons.



PROJECT 1: SINGLE MOTOR DANCER

TIME: 45 minutes

LEVEL: Beginner



MOVE A MOTOR

1. Learn to program a position servo to move back and forth.
 - a. Check out the [programming tutorials](#) on the BirdBrain site.
2. Experiment with angles and time.

MOTOR INSERT HACK

3. Mount a servo on cardboard:
 - a. Check out the [video tutorial](#) on the BirdBrain site.
 - b. Trace around the motor.
 - c. Cut on the inside of the lines.
 - d. Pop out the piece you just cut.
 - e. Insert the motor, wire first.

DESIGN and BUILD

4. Design and build a robot that has a wiggling body part using this hack.

PROJECT 1 EXAMPLE

HULA DANCER

This hula dancer is triggered by a sound sensor!

(Did you know
Matt is a
singer???)



Tag us on Twitter with pictures and videos!

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PROJECT 2: AEROBICS ROBOT

TIME: 2 hours

LEVEL: Intermediate

THE CHALLENGE:

Design and build a robot that can teach someone to do a dance move!

SUGGESTED CRITERIA Things your robot must do	SUGGESTED CONSTRAINTS Limits on your project
<ul style="list-style-type: none">• Must include at least 2 motors.• Must perform a repeatable dance move.• Must teach a human how to do the dance move.	<ul style="list-style-type: none">• Time limit: _____• Limits on materials• Size limit: Shoe box

This is a CREATIVE task! Every project will look different!

PRESENT THE CHALLENGE

1. Ask if there are questions or additions to the criteria and constraints.
2. Anything not listed is fair game!

PROTOTYPE

3. Students should draw or make a prototype of their design.
 - a. Try out this [prototyping activity](#) write up.

BUILD AND PROGRAM

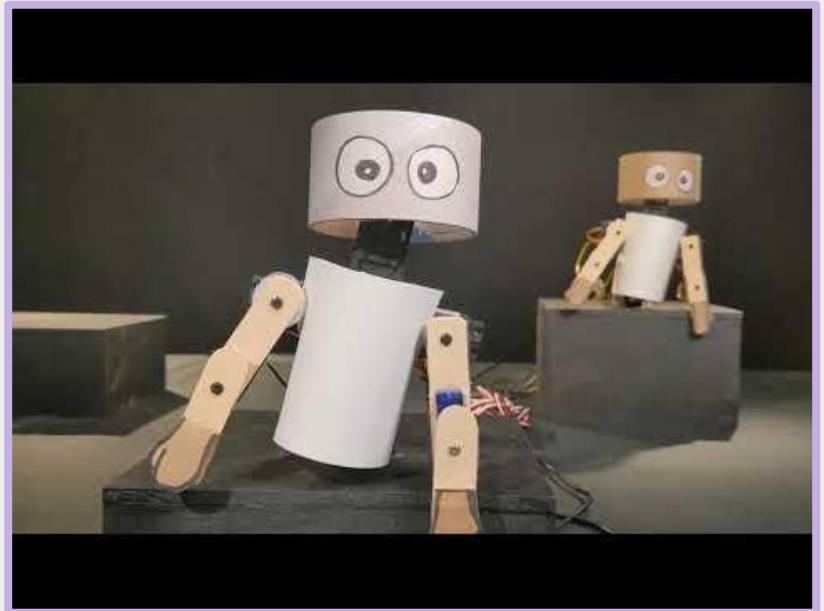
4. Gather materials and start building!

PROJECT 2 INSPIRATION

FULL ROBOT AEROBICS ROUTINE

Here is the full aerobics routine from the opening sequence of Robot Aerobics.

There are 6 position servos in each robot!



Check out our example code for our Robot Aerobics dancers here:

https://makecode.microbit.org/_cYbervLyE6us

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